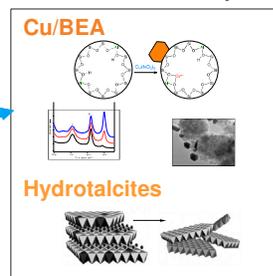


Capability Nodes

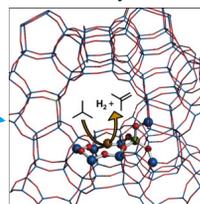
Comprising more than 50 unique, world-class capabilities/expertise in:

Foundational Science

Advanced Synthesis and Characterization

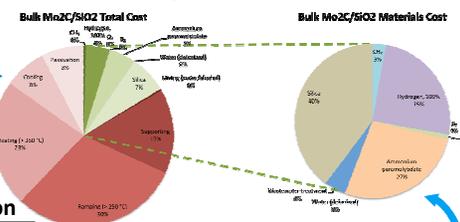


Theory

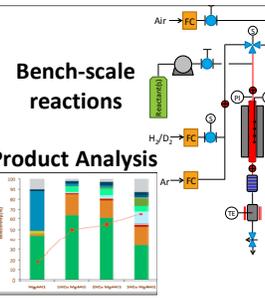


Applied Engineering

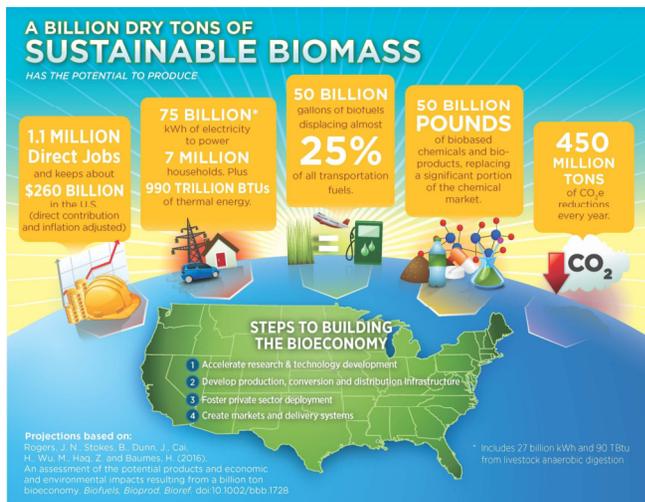
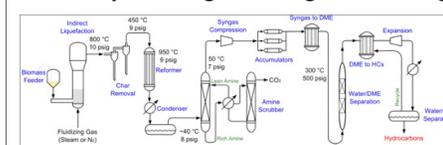
Catalyst Cost Estimation



Performance Evaluation



Catalyst Scaling and Integrated Testing



Catalysis Challenges due to Biomass

- High oxygen content → new reactions
- Diverse chemical functionalities → competing reactions
- High water content → degradation of catalytic supports
- Impurities (S, N, alkali metals, Cl, etc.) → poisoning
- Multiple states and compositions (solid, liquid, or gas)
- Complex, heterogeneous mixture → difficult to model

ChemCatBio FY19 Structure

Catalytic Upgrading of Biochemical Intermediates

(NREL, PNNL, ORNL, LANL)

Catalytic Upgrading of Indirect Liquefaction Intermediates

(NREL, PNNL, ORNL)

Catalytic Fast Pyrolysis

(NREL, PNNL)

Electrocatalytic and Thermocatalytic CO₂ Utilization

(NREL, ORNL)

Zeolites and Metal Oxide Catalysts

Supported Metal Catalysts

Advanced Catalyst Synthesis and Characterization

(NREL, ANL, ORNL, SNL)

Catalyst Cost Model Development

(NREL, PNNL)

Consortium for Computational Physics and Chemistry

(ORNL, NREL, PNNL, ANL, NETL)

Catalyst Deactivation Mitigation for Biomass Conversion

(PNNL)

ChemCatBio FY18 Partnership Funding

\$1.8M awarded to partner leveraging ChemCatBio capabilities



ChemCatBio FY17 Partnership Funding

9 proposals selected, with \$4.3M awarded to 5 labs and 30% cost share provided from industry partners.

Unique capabilities in catalyst characterization, catalyst synthesis, catalyst evaluation, theory, and technoconomics being utilized across 5 core labs.



Visit the website: www.chemcatbio.org for quarterly webinar info and more